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Agilent Ref: 10010729-1
United States Application Serial No. 09/900,760

VIA Email

AMENDMENTS for Examiner Sisson to enter by Examiner's amendment, as discussed by phone on 9/6/05	Attorney Docket	10010729-1
	Confirmation No.	4579
	First Named Inventor	Namyong Kim
	Application Number	09/900,760
	Filing Date	July 2, 2001
	Group Art Unit	1634
	Examiner Name	Bradley Sisson
	Title	Methods of Making and Using Substrate Surfaces Having Covalently Bound Polyelectrolyte Films

AMENDMENTS

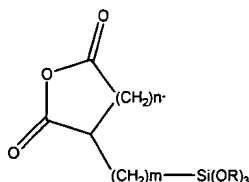
In the claims:

Cancel Claims 1-16.

17. **(Original)** A method for fabricating a microarray, said method comprising:
- (a) producing a polyelectrolyte layer on at least one surface of a substrate;
 - (b) depositing a plurality of spots of ligands on said polyelectrolyte layer, said ligand spots arranged in an array pattern;
 - (c) contacting said polyelectrolyte layer with a reagent comprising:
 - (i) a passivating moiety that reacts with said polyelectrolyte layer,and
 - (ii) a substrate reactive functionality; and
 - (d) producing a covalent bond between said substrate reactive functionality and said substrate.
18. **(Original)** The method of claim 17, further comprising cross-linking said ligand spots onto said polyelectrolyte layer.
19. **(Original)** The method of claim 18, wherein said ligands comprise nucleic acids.

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20. **(Original)** A method for fabricating a microarray, said method comprising:
- (a) producing a polyamine layer on at least one silica surface of a substrate;
 - (b) depositing a plurality of spots of ligands on said polyamine layer, said ligand spots arranged in an array pattern;
 - (c) contacting said polyamine layer with a solution of a trialkoxysilyl anhydride; and
 - (d) forming a covalent bond between said anhydride and said polyamine layer and a covalent silicon-oxygen bond between said trialkoxysilyl propyl anhydride and said silica surface on said substrate.
21. **(Original)** The method of claim 20, wherein said polyamine comprises poly(L-lysine).
22. **(Original)** The method of claim 20, wherein said trialkoxysilyl anhydride comprises a compound having the structure:



wherein n is either zero or an integer from 1 to 10, m is either zero or an integer from 1 to 10, and R is an alkyl or functionally terminated alkenyl group.

23. **(Original)** The method of claim 22, wherein n is an integer equal to 1 or 2, and m is either zero or an integer from 1 to 4.
24. **(Original)** The method of claim 20, wherein said trialkoxysilyl anhydride comprises 3-(triethoxysilyl)propyl-succinic anhydride.

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25. **(Original)** The method of claim 20, further comprising cross-linking said ligand spots onto said polyamine layer.

26. **(Original)** The method of claim 20, wherein said ligands comprise nucleic acids.

Cancel Claims 27-40.

Please add the following new claims:

41. **(Previously Presented)** A method for fabricating a microarray, said method comprising:

- (a) producing a polyelectrolyte layer on at least one surface of a substrate;
- (b) depositing a plurality of different aqueous volumes on said polyelectrolyte layer in an array pattern to produce an array of deposited spots, wherein each aqueous volume of said plurality comprises a polymer;
- (c) contacting said polyelectrolyte layer with a reagent comprising:
 - (i) a passivating moiety that reacts with said polyelectrolyte layer, and
 - (ii) a substrate reactive functionality; and
- (d) producing a covalent bond between said substrate reactive functionality and said substrate.

42. **(Previously Presented)** The method of claim 41, further comprising cross-linking polymers of said deposited spots onto said polyelectrolyte layer.

43. **(Previously Presented)** The method of claim 41, wherein said polymers are nucleic acids.

44. **(Previously Presented)** The method of claim 41, wherein said polymers are peptides.

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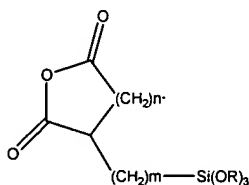
45 [[44]]. (Currently Amended) The method according to Claim 41, wherein said plurality of aqueous volumes are deposited by ink-jet deposition.

46 [[45]]. (Currently Amended) The method according to Claim 41, wherein said polyelectrolyte is a polyamine.

47 [[46]]. (Currently Amended) The method of claim **[[45]] 46**, wherein said polyamine comprises poly(L-lysine).

48 [[47]]. (Currently Amended) The method of claim 41, wherein said reagent is a trialkoxysilyl anhydride.

49 [[48]]. (Currently Amended) The method of claim **[[47]] 48**, wherein said trialkoxysilyl anhydride comprises a compound having the structure:



wherein n is either zero or an integer from 1 to 10, m is either zero or an integer from 1 to 10, and R is an alkyl or functionally terminated alkenyl group.

50 [[49]]. (Currently Amended) The method of claim **[[48]] 49**, wherein n is an integer equal to 1 or 2, and m is either zero or an integer from 1 to 4.

51 [[50]]. (Currently Amended) The method of claim **[[47]] 48**, wherein said trialkoxysilyl anhydride comprises 3-(triethoxysilyl)propyl-succinic anhydride.

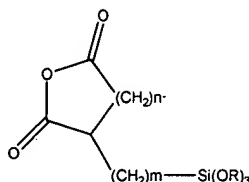
52 [[51]]. (Currently Amended) A method for fabricating a nucleic acid microarray, said method comprising:

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- (a) producing a polyamine layer on at least one silica surface of a substrate;
- (b) depositing a plurality of different aqueous volumes of nucleic acids on said polyamine layer in an array pattern to produce an array of deposited nucleic acid spots;
- (c) contacting said polyamine layer with a solution of a trialkoxysilyl anhydride; and
- (d) forming a covalent bond between said anhydride and said polyamine layer and a covalent silicon-oxygen bond between said trialkoxysilyl propyl anhydride and said silica surface on said substrate.

53 [[52]]. (Currently Amended) The method of claim **52 [[51]]**, wherein said polyamine comprises poly(L-lysine).

54 [[53]]. (Currently Amended) The method of claim **52 [[51]]**, wherein said trialkoxysilyl anhydride comprises a compound having the structure:



wherein n is either zero or an integer from 1 to 10, m is either zero or an integer from 1 to 10, and R is an alkyl or functionally terminated alkenyl group.

55 [[54]]. (Currently Amended) The method of claim **54 [[53]]**, wherein n is an integer equal to 1 or 2, and m is either zero or an integer from 1 to 4.

56 [[55]]. (Currently Amended) The method of claim **52 [[51]]**, wherein said trialkoxysilyl anhydride comprises 3-(triethoxysilyl)propyl-succinic anhydride.

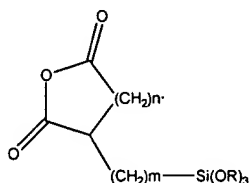
57 [[56]]. (Currently Amended) The method of claim **52 [[51]]**, further comprising cross-linking said nucleic acid spots onto said polyamine layer.

58 [[57]]. (Currently Amended) A method for fabricating a peptide microarray, said method comprising:

- (a) producing a polyamine layer on at least one silica surface of a substrate;
- (b) depositing a plurality of different aqueous volumes of peptides on said polyamine layer in an array pattern to produce an array of deposited peptide spots;
- (c) contacting said polyamine layer with a solution of a trialkoxysilyl anhydride; and
- (d) forming a covalent bond between said anhydride and said polyamine layer and a covalent silicon-oxygen bond between said trialkoxysilyl propyl anhydride and said silica surface on said substrate.

59 [[58]]. (Currently Amended) The method of claim **58 [[57]]**, wherein said polyamine comprises poly(L-lysine).

60 [[59]]. (Currently Amended) The method of claim 57, wherein said trialkoxysilyl anhydride comprises a compound having the structure:



wherein n is either zero or an integer from 1 to 10, m is either zero or an integer from 1 to 10, and R is an alkyl or functionally terminated alkenyl group.

61 [[60]]. (Currently Amended) The method of claim **60 [[59]]**, wherein n is an integer equal to 1 or 2, and m is either zero or an integer from 1 to 4.

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62 [[61]]. (Currently Amended) The method of claim **58 [[57]]**, wherein said trialkoxysilyl anhydride comprises 3-(triethoxysilyl)propyl-succinic anhydride.

63 [[62]]. (Currently Amended) The method of claim **58 [[57]]**, further comprising cross-linking said nucleic acid spots onto said polyamine layer.

64 [[63]]. (Currently Amended) The method of claim 17, wherein said depositing step (b) comprises depositing a plurality of different aqueous volumes of ligands on said polyelectrolyte layer.

65 [[64]]. (Currently Amended) The method according to Claim **64 [[63]]**, wherein said ligands are nucleic acids.

66 [[65]]. (Currently Amended) The method according to Claim **64 [[63]]**, wherein said ligands are peptides.

67 [[66]]. (Currently Amended) The method according to Claim **64 [[63]]**, wherein said plurality of aqueous volumes are deposited by ink-jet deposition.

68 [[67]]. (Currently Amended) The method of claim 20, wherein said depositing step (b) comprises depositing a plurality of different aqueous volumes of ligands on said polyelectrolyte layer.

69 [[68]]. (Currently Amended) The method according to Claim **[[67]] 68**, wherein said ligands are nucleic acids.

70 [[69]]. (Currently Amended) The method according to Claim **[[67]] 68**, wherein said ligands are peptides.

71 [[70]]. (Currently Amended) The method according to Claim **[[67]] 68**, wherein said plurality of aqueous volumes are deposited by ink-jet deposition.